March 16. (Stated Meeting.)

Rev. B. LLOYD, D. D., Provost T. C. D., President, in the Chair.

This being the day of the annual election, the following Officers and Members of Council were chosen for the ensuing year:

President—Rev. Bartholomew Lloyd, D. D.
Treasurer—Thomas Herbert Orpen, M. D.
Secretary—Rev. Joseph Henderson Singer, D. D.
Secretary to Council—Rev. Richard Mac Donnell, D. D.
Secretary of Foreign Correspondence—Sir Wm. Betham.
Librarian—Rev. William Hamilton Drummond, D. D.

Committee of Science.

Rev. Franc Sadleir, D. D., Rev. Richard Mac Donnell, D. D., Sir William Rowan Hamilton, Rev. Humphrey Lloyd, James Apjohn, M. D., James Mac Cullagh, Esq., Captain Portlock, R. E.

Committee of Polite Literature.

The Archbishop of Dublin, Rev. Joseph Henderson Singer, D. D., Andrew Carmichael, Esq., Samuel Litton, M. D., Rev. William Hamilton Drummond, D. D., Rev. Charles Richard Elrington, D. D., William West, M. D.

Committee of Antiquities.

Rev. James Henthorn Todd, Thomas Herbert Orpen, M. D., Hugh Ferguson, M. D., Sir William Betham, George Petrie, Esq., Rev. Cæsar Otway, Dean of St. Patrick's.

Professor Kane read a paper, entitled "Researches on the Combinations derived from Pyroacetic Spirit."

In order to understand the relation between the following bodies and pyroacetic spirit, the atomic weight of the latter

must be considered as representing four volumes of vapour, and its formula written $C_6 H_6 O_2$. It has been found to give a series generally analogous to that of ordinary alcohol, and Professor Kane proposes for it the name *Mesitic Alcohol.*

By means of sulphuric acid there is obtained a fluid colourless, of an alliaceous odour, boiling at 276. F. and having the composition $C_6 H_4$, to which is given the name *Mesitylene.*

By acting on mesitic alcohol with perchloride of phosphorus there is generated *phospho-mesitylic acid,* and a compound fluid heavier than water, which has the formula $C_6 H_5 cl$; and, by the decomposition of the latter by means of potash, a body $C_6 H_5 O$. These may be considered either as containing *Mesitylene,* or a hypothetic radical *Mesityl,* thus:

$C_6 H_5 + O$. Oxide of Mesityl.	$C_6 H_4 + HO$. Hydrate of Mesitylene.
$C_6 H_5 + cl$. Chloride of Mesityl.	$C_6 H_4 + Hcl$. Muriate of Mesitylene.

By the action of phosphorus and iodine on mesitic alcohol, there is produced an *iodide of mesityl,* having the formula $C_6 H_5 I$.

Oxide of Mesityl unites with sulphuric acid in two proportions, forming the sulphate and the bisulphate of mesityl; both of these are acid, and unite with bases forming well characterized salts.

The salts of the former are called *sulphomesitylates,* and of the latter *persulphomesitylates;* and a very anomalous character in these salts is, that the quantity of the inorganic base is such as could neutralize the whole of the sulphuric acid which they contain. Thus the sulpho-mesitylate of lime has the formula

$$SO_3 + C_6 H_5 O + Ca O + HO;$$

and the persulphomesitylate of lime

$$2so_3 + C_6 H_5 O + 2ca\,O + HO.$$

When an excess of phosphorus is used in the process for making iodide of mesityl, there is obtained in the retort a white matter in silky crystals, which dissolves in water, is very acid, and forms well characterized salts, which, when heated, take fire and burn with a well marked flame of phosphorus. This acid is termed *hypophosphomesitylous acid;* and the formula of the *hypophosphomesitylate of baryta* is

$$P_2 O + C_6 H_5 O + Ba\,O + HO.$$

In the decomposition of mesitic alcohol by perchloride of phosphorus there is obtained an acid which gives a soda salt crystallizing in rhombs which contain water of crystallization. Their formula is

$$P_2 O_5 + Na\,O + C_6 H_5 O + 6HO.$$

Professor Kane stated that he had obtained also the aldehyd of the mesityl series, as well as bodies procured by the action of chlorine and iodine on mesitylene, and the acids which are generated by the oxidation of mesitic alcohol, the history of which bodies shall form the subject of another paper.

The empyreumatic oil, which is produced in small quantity when mesitic alcohol is prepared by distilling acetate of lime, has been submitted to analysis by Professor Kane, and its composition found to be $C_{10} H_8 O$. It therefore belongs to the family of which oil of turpentine is the base, and is polymeric with camphor, and the pinic, sylvic, and copaivic acids.*

Dr. Apjohn read a paper "On the Specific Heats of the Aeriform Fluids."

The first part of this communication was an analysis of, and some critical remarks upon, the labours of those who

* In this abstract the atomic weights are taken, Hydrogen = 1. Oxygen = 8. Carbon = 6, 13.

had preceded the author in the same investigation, particularly those of Dulong. Dr. Apjohn's own method was then detailed. In a paper read by him before the Academy in April, 1835, the equation* $f'' = f' - \frac{48ad}{e} \times \frac{p}{30}$ was proved to include the solution of the dew-point problem. But the factor a in this expression, which is obviously equal (when the air or gas is dry, or in other words, when $f'' = 0$) to $\frac{f'e}{48d} \times \frac{30}{p}$, is the specific heat under a given volume of the gas which is supposed to be the subject of experiment. Hence if f' and d be determined for the various aeriform fluids by observation, their relative capacities for caloric can be compared. Such is the principle of the method.

Two distinct series of experiments were then detailed, from the second of which, as comprehending those which he conceives to be most accurate, the author has deduced the following table of specific heats:

Specific Heats of equal Volumes.

Atmospheric Air, ...	1.000
Nitrogen, ...	1.048
Oxygen, (by calculation,) . .	.808
Hydrogen, ...	1.459
Carbonic Acid, ...	1.195
Carbonic Oxide	.996
Nitrous Oxide, ...	1.193.

Dr. Apjohn conceives himself justified in drawing from his researches the following conclusions:

1°. All gases have not under equal volumes the same specific heat.

2°. This law is not even true of the simple gases.

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* $d = t - t'$ the difference of the temperatures shown by a wet and dry thermometer, and f' is the elastic force of vapour at temperature t'.

3°. There does not appear to be any simple relation between the specific heats of the gases, and their specific gravities or atomic weights.

A paper was then read "On some remarkable Salts, obtained by the action of Ferrocyanide of Potassium on Sulphovinates and Sulphomethylates."* By William Gregory, M. D., F. R. S. E., &c.

The Committee appointed to examine the Treasurer's Account reported as follows:

"Examined the above Account,† with the vouchers produced, and found it to be correct; and we find that there is a balance in bank of £284 6*s.* 5*d.*, and in the Treasurer's hands £110 16*s.* 1*d.*, making a total balance of £395 2*s.* 6*d.* sterling.

"(Signed,)

"FRANC SADLEIR,

"C. R. ELRINGTON.

"*Feb. 20th*, 1837."

"The Treasurer reports that there are the following portions of Stock in the Bank of Ireland to the credit of the Academy:

"£1500 in the 3 per Cent. Consols.

"£1500 in the 3½ per Cent. Government Stock, being the Cunningham Fund.

"(Signed,)

"FRANC SADLEIR.

"*Feb. 20th*, 1837."

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* An abstract of this paper will be given in the next number of the Proceedings.

† Entered in the Treasurer's Book.

DONATIONS.

Observations on the Evidence taken before the Committee of the House of Commons, on the Record Commission in 1836, *and the Report so far as it refers to the Irish Records.* By Sir William Betham, Ulster King of Arms, &c. &c. Presented by the Author.

An Oration on the Important Advantages derivable from Philosophical Instruction. By Henry W. Dewhurst, Esq. Presented by the Author.

A Practical Treatise on the Management and Diseases of Children. By Richard T. Evanson, M. D. Presented by the Author.

The following is the extract from the letter of the Baron de Donop to Sir William Betham, referred to in the last number of the Proceedings:

"Our literati in Germany have been of late much excited and interested by the alleged discovery of the MS. Translation of the History of the Phœnicians, by Philo Biblius, now printing at Bremen. It is generally considered a modern fabrication; but at the same time it is not easy to say by whom. Time will, at no very distant period, decide the question, as upwards of 100 pages of the Greek text have been already printed.

"For myself, I am inclined to think it genuine. A close and careful examination of a portion which has appeared at Hanover, has convinced me that no fabricator could have formed that work, unless he had been profoundly acquainted with the writings of Vallancey, O'Connor, your own works, and those of all others who have asserted the identity of the Phœnician Punic language with that of Ireland; for it is that tongue which is recognized in all the names, almost without exception, which in the mouth of Sanconiathon ought to be Phœnician.

"The most surprizing fact of all is, that in the Chronicles of O'Connor,* which is a book almost unknown in Germany, are to be found accordances not to be mistaken. For instance, what the Chronicles call *aoi-magh*, Sanconiathon calls *Ma thai*. O'Connor says aoj-maġ, a flat country, or region of plains, and *Mathai-Bal* is the first king of the Syrian Phœnician plains of Sidon, according to Sanconiathon. His name, therefore, is nothing more than *Magd-ai-Bal*—and, as in the Chronicles, this *aoi-mag* is the Sidonian Hamath of the ancients—the same Mathai-Bal of Sanconiathon, who caused to be constructed the fortress of *Hamath* on the plains, to defend himself against the neighbouring mountaineers.

"*Maol*, in the Chronicles, is the name of one of the kings of the Gael. The same name appears on the famous Lybian stone of Tucca. Sanconiathon places *Bi-maol* at the head of the kings of Sidon, and his descendants are called *O-Christo-bi-mal*, which is evidently nothing more than ceapt-o-be-maol.

"Between 1020 and 1008, B. C., the Chronicles mention Jar-ram, king of Phœnicia, a conqueror, jealous of the dignity of his empire, to whom all the natives of Spain were tributary. At the same period, according to Sanconiathon, there reigned a king of Phœnicia of the same name, *Joram*—the *Hiram of Solomon*—and that Joram was not only master of the west, but extended his rule to the Isle of Ceylon.

"The most interesting portion of all Sanconiathon, is the Phœnician periplous, in which is set forth an enumeration of the Phœnician colonies, extending to the Canary Islands, with their sea and land forces, made by order of Joram."

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* The Chronicles mentioned by Baron de Donop are the Chronicles by Mr. Roger O'Connor, which are nothing more than a paraphrastic version of the Milesian story.

PROCEEDINGS

OF

THE ROYAL IRISH ACADEMY.

1837. No. 4.

March 16.

(*Continued from last Number.*)

"On some remarkable Salts, obtained by the action of Ferrocyanide of Potassium on Sulphovinates and Sulphomethylates." By William Gregory, M.D., F. R. S. E., &c.

When ferrocyanide of potassium is added to sulphovinate of lime, a precipitate appears, which, when heated, gives off hydrocyanic ether. This salt (called A) contains iron, calcium, potassium, cyanogen, and the base of ether.

The mother liquid is found to contain a salt B, very soluble in water and alcohol, which, also, on being heated, yields hydrocyanic ether. The ingredients of B are sulphuric acid, potash, ether, and cyanogen.

In order to avoid the confusion which might result from the use of a salt of lime, (as Mosander has shown that ferrocyanide of potassium produces in the salts of lime, generally, a precipitate consisting of iron, calcium, potassium, and cyanogen,) the author next tried sulphovinate of potash. By the action of ferrocyanide of potassium on this salt he got a salt C, corresponding to A, but different; and another salt D, identical with B.

When sulphomethylate of lime was employed, two salts E and F were obtained, exactly analogous to A and B: and by employing sulphomethylate of potash he got G, corresponding to E, and H, identical with F.

As it seemed likely that the study of any one of these reactions would explain all the rest, the author began with the analysis of G and H, of which he had a larger supply than of the others.

G is lemon yellow, transparent, soluble in water, insoluble in alcohol, crystallizing in square tables much resembling those of ferrocyanide of potassium. By exposure to a heat of 212°, it loses 13.5 per cent. water of crystallization, and becomes opaque. More strongly heated it is decomposed, giving off hydrocyanate of methylene, $= C_2 H_3 cy$ or Me cy. The analysis corresponds with the formula 4 K cy, 3 Fe cy, M cy, 8 Aq.

H is white, very soluble in water and alcohol, crystallizing in square shining tables. It closely resembles sulphomethylate of potash, but differs from it in being anhydrous, in containing cyanogen, and in yielding hydrocyanate of methylene when decomposed by heat. Its analysis agrees with the formula 6 S O_3, 3 K O, M O, M cy.

If 3 equivalents of ferrocyanide of potassium be supposed to act on 3 of sulphomethylate of potash there is the following equation:

3 equiv. Ferrocyanide		3 equiv. Sulphomethylate
6 K cy, 3 Fe cy	+	6 S O, 3 K O, 3 M O =
1 equiv. G		1 equiv. H
= 4 K cy, 3 Fe cy, M cy	+	6 S O_3, 3 K O, M O, M cy

+ 2 K O. *i. e.* 2 equiv. potash. In conformity with this explanation, the liquid in which G crystallizes is alkaline.

If this explanation be admitted, it will of course apply, *mutatis mutandis,* to the salts A B, C D, E F. The author, however, is not yet satisfied that the salts which he analyzed may not have been mixtures, perhaps in definite proportions. No doubt can be entertained that new salts have been formed, but the close resemblance between their properties and those of the salts which yield them, renders the task of purifying and analyzing them one of great difficulty.

(*To be continued.*)